

CLAIMS

1. A polyester obtainable in the presence of an antimony catalyst, wherein the antimony catalyst
5 comprises:
 - (i) diantimony trioxide, and
 - (ii) 1 to 10 wt% of diantimony tetraoxide and/or diantimony pentaoxide based on diantimony trioxide.
- 10 2. The polyester of claim 1, wherein the content of an antimony compound is 0.01 to 0.1 wt%.
3. The polyester of claim 1, comprising a polyethylene terephthalate as a main constituent and
15 satisfying the following requirements:
 - (A) the amount of copolymerized diethylene glycol is 0.6 to 1.4 wt% based on the total weight of the polyester,
 - (B) the cooling crystallization temperature (T_{cd}) is
20 180°C to 205°C ,
 - (C) when the heating crystallization temperature is T_{ci} , $T_{cd} - T_{ci}$ is 5°C to 30°C , and
 - (D) the half-time of crystallization τ at 200°C is 60 to 90 seconds.
- 25 4. The polyester of claim 1, wherein the antimony catalyst further satisfies the following requirements:
 - (a) the content of a Pb element is 1 to 100 ppm,
 - (b) the content of an As element is 1 to 100 ppm, and
 - 30 (c) an Fe element is substantially not contained.
5. Fibers obtainable by melt-spinning the polyester of claim 1.

6. The fibers of claim 5, wherein the relationship between boiling water shrinkage (BWS) and birefringence (Δn) satisfies the following formula (1):

$$3,000 \times \Delta n \leq \text{BWS} \leq 5,000 \times \Delta n \quad (1)$$

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7. A method for producing a polyester by subjecting a dicarboxylic acid or an ester forming derivative thereof and a diol or an ester forming derivative thereof to an esterification reaction or a transesterification reaction and then carrying out a polycondensation reaction in the presence of an antimony catalyst, wherein the antimony catalyst comprises:

- (i) diantimony trioxide, and
15 (ii) 1 to 10 wt% of diantimony tetraoxide and/or diantimony pentaoxide based on diantimony trioxide.

8. The method of claim 7, wherein the polycondensation reaction is carried out in the presence of 0.01 to 0.1 wt% of the antimony catalyst based on the weight of the polyester to be obtained.

9. The method of claim 7, wherein the antimony catalyst satisfies the following requirements:

- 25 (a) the content of a Pb element is 1 to 100 ppm,
(b) the content of an As element is 1 to 100 ppm, and
(c) an Fe element is substantially not contained.

10. A catalyst for polymerization of polyester, comprising:

- (i) diantimony trioxide, and
(ii) 1 to 10 wt% of diantimony tetraoxide and/or diantimony pentaoxide based on diantimony trioxide.

11. The catalyst of claim 10, further satisfying the following requirements:

- (a) the content of a Pb element is 1 to 100 ppm,
- (b) the content of an As element is 1 to 100 ppm, and
- 5 (c) an Fe element is substantially not contained.